CLAIMS:

1. An ultrasound imaging system (400) for acquiring a series of images, the ultrasound system (400) comprising:

a transducer (11) for emitting and receiving ultrasound energy;

a beamformer assembly (402) for beamforming in accordance with at least one beamforming parameter the emitted and received ultrasound energy for generating a plurality of scan lines and acquiring a series of images;

at least one user input device (460) for enabling a user to select at least one automatic adjustment parameter including an axis selectable from a line in space for which scan lines of a set of scan lines generated during one of rotation about the line in space or translation along the line in space lie within an acoustic field of view of the transducer (11), and an adjustment factor; and

a control unit (412) for controlling the beamformer assembly (402) during acquisition of the series of images for adjusting the at least one beamformer parameter for an image being acquired with respect to a previous image acquired in accordance with the at least one automatic adjustment parameter, for at least one of rotating about the axis and translating along the axis the image being acquired with respect to the previous image by an amount defined by the adjustment factor.

2. The ultrasound imaging system according to Claim 1,

wherein the ultrasound imaging system (400) further comprises circuitry for receiving a plurality of trigger signals (472) driven by the occurrence of an event, including at least one trigger signal driven by at least an asynchronous event; and

wherein the control unit (412) acquires individual images of the series of images in response to receipt of a respective at least one trigger signal of the at least one trigger signal.

3. The ultrasound imaging system (400) according to Claim 1,

wherein the transducer (11) includes an array of transducer elements;

and

wherein an apex location is further selectable via the at least one user input device (460), wherein the apex location is selectable from at least a point other than the geographic center of the array of transducer elements, and wherein the selected apex location determines an apex of at least a portion of the plurality of scan lines corresponding to the first image of the series of images.

4. The ultrasound imaging system (400) according to Claim 1, wherein each image of the series of images is a 2-D image.

5. The ultrasound imaging system (400) according to Claim 4, wherein at least one plane orientation parameter is further selectable via the user input device (460), wherein the plane orientation parameter is selectable from any plane lying within the acoustic field of view of the transducer (11), and wherein the plane orientation parameter determines orientation of a plane of the first image of the series of images.

6. The ultrasound imaging system (400) according to Claim 1, wherein each image of the series of images is a 3-D image.

7. The ultrasound imaging system (400) according to Claim 1, wherein the at least one automatic adjustment parameter includes at least one of a gain adjustment factor, a power adjustment factor, an image configuration adjustment factor, a receive aperture adjustment factor, a receive apodization adjustment factor, a transmit apodization adjustment factor, and a transmit aperture adjustment factor, and adjusting the at least one beamformer parameter includes adjusting for acquisition of the image being acquired with respect to acquisition of the previous image at least one of receive gain, transmit power, at

least one image configuration parameter, including at least one of type of shape of the image being acquired and at least one dimension defining the shape of the image being acquired, a receive aperture configuration, receive apodization gain profile, transmit apodization gain profile, and a transmit aperture configuration in accordance with the gain adjustment factor, the power adjustment factor, the image configuration adjustment factor, the receive aperture adjustment factor, the receive apodization adjustment factor, the transmit apodization adjustment factor, and the transmit aperture adjustment factor, respectively.

8. The ultrasound imaging system (400) according to Claim 2, wherein the at least one trigger signal includes at least one of at least one actuator signal generated by a user operated actuator, at least one cardiac cycle signal generated by an electro-cardiograph generator, and at least one respiration cycle signal generated by a respiratory gating device.

9. The ultrasound imaging system (400) according to Claim 1, wherein the series of images are processed for being displayed on a display device (450) using display persistence.

10. The ultrasound imaging system (400) according to Claim 1, wherein the transducer (11) includes an array having elements distributed in a plurality of dimensions.

11. An ultrasound imaging system (400) for acquiring a series of images, the ultrasound system (400) comprising:

a transducer (11) for emitting and receiving ultrasound energy;

a beamformer assembly (402) for beamforming in accordance with at least one beamforming parameter the emitted and received ultrasound energy for acquiring a series of images;

circuitry for receiving a plurality of trigger signals (472) driven by the occurrence of an event including at least one trigger signal driven by at least an asynchronous event; and

a control unit (412) for controlling the beamformer assembly (402) during acquisition of the series of images for providing for acquiring individual images of the series of images in accordance with receipt of a respective at least one trigger signal of the at least one trigger signal, wherein the controlling includes adjusting the at least one beamformer parameter for an image acquisition with respect to a previous image acquisition in accordance with at least one predetermined automatic adjustment parameter, wherein the adjusting includes providing for shifting positioning of the image being acquired with respect to the previous image acquisition.

12. The ultrasound imaging system (400) according to Claim 11, wherein the at least one trigger signal includes at least one of at least one actuator signal generated by a user operated actuator, at least one cardiac cycle signal generated by an electro-cardiograph generator, and at least one respiration cycle signal generated by a respiratory gating device.

13. The ultrasound imaging system (400) according to Claim 11, wherein the beamformer assembly (402) further generates a plurality of scan lines for acquiring the series of images, and wherein the automatic adjustment parameter includes an axis selectable from a line in space for which scan lines of a set of scan lines generated during one of rotation about the line in space or translation along the line in space lie within an acoustic field of view of the transducer (11) and an adjustment factor, and adjusting the at least one beamformer parameter includes at least one of rotating about the axis and translating along the axis the image being acquired with respect to the previous image by an amount defined by the adjustment factor.

14. The ultrasound imaging system (400) according to Claim 11, wherein each image of the series of images is a 2-D image.

15. The ultrasound imaging system (400) according to Claim 14, wherein orientation of a plane of the first image of the series of images is determined in accordance with a predefined plane orientation parameter selectable from any plane lying within the acoustical field of view of the transducer (11).

16. The ultrasound imaging system (400) according to Claim 11, wherein each image of the series of images is a 3-D image.

17. The ultrasound imaging system (400) according to Claim 11, wherein the at least one automatic adjustment parameter includes at least one of a gain adjustment factor, a power adjustment factor, an image configuration adjustment factor, a receive aperture adjustment factor, a receive apodization adjustment factor, a transmit apodization adjustment factor, and a transmit aperture adjustment factor, and adjusting the at least one beamformer parameter includes adjusting for acquisition of the image being acquired with respect to acquisition of the previous image at least one of receive gain, transmit power, at least one image configuration parameter, including at least one of type of shape of the image being acquired and at least one dimension defining the shape of the image being acquired, a receive aperture configuration, receive apodization gain profile, transmit apodization gain profile, and a transmit aperture configuration in accordance with the gain adjustment factor, the power adjustment factor, the image configuration adjustment factor, the receive aperture adjustment factor, the receive apodization adjustment factor, the transmit apodization adjustment factor, and the transmit aperture adjustment factor, respectively.

18. The ultrasound imaging system (400) according to Claim 11, wherein the providing for shifting positioning includes providing for at least one of translating, rotating and changing the shape of the image being acquired with respect to a previous image acquisition.

19. The ultrasound imaging system (400) according to Claim 11, wherein the transducer (11) includes an array having elements distributed in a plurality of dimensions.

20. A method of ultrasonically imaging with a transducer array for generating a plurality of scan lines for imaging a region of interest of a body comprising the steps of:

providing for receiving at least one automatic adjustment parameter including an axis selectable from a line in space for which scan lines of a set of scan lines generated during one of rotation about the line in space or translation along the line in space lie within an acoustic field of view of the transducer array and an adjustment factor; and

providing for controlling beamforming of at least one of ultrasound energy emitted by the transducer array and ultrasound energy received by the transducer array in accordance with at least one beamforming parameter for acquiring a series of images by adjusting the at least one beamformer parameter for an image being acquired with respect to a previous image acquired in accordance with the at least one automatic adjustment parameter for at least one of rotating about the axis and translating along the axis the image being acquired with respect to the previous image by an amount defined by the adjustment factor.

21. The method according to Claim 20, further comprising the step of receiving a plurality of trigger signals including at least one trigger signal driven by at least an asynchronous event, wherein the controlling step further includes acquiring respective images of the series of images in ~~response~~ to receipt of a respective at least one trigger signal of the plurality of trigger signals.

22. A method of ultrasonically imaging with a transducer array a region of interest of a body comprising the steps of:

providing for receiving at least one automatic adjustment parameter;

providing for receiving a plurality of trigger signals driven by an event including at least one trigger signal driven by at least an asynchronous event; and

providing for controlling beamforming of at least one of ultrasound energy emitted by the transducer array and ultrasound energy received by the transducer array in accordance with at least one beamforming parameter for acquiring a series of images, where respective images of the series of images are acquired in response to receipt of a respective at least one trigger signal of the at least one trigger signal, including adjusting the at least one beamformer parameter for an image acquisition with respect to a previous image acquisition in accordance with the at least one automatic adjustment parameter, wherein the adjusting includes providing for shifting positioning of the image being acquired with respect to the previous image acquisition.

23. The method according to Claim 22, wherein the at least one trigger signal includes at least one of at least one actuator signal generated by a user operated actuator, at least one cardiac cycle signal generated by an electro-cardiographic generator, and at least one respiration cycle signal generated by a respiratory gating device.

24. The method according to Claim 22, wherein the providing for shifting positioning includes at least one of providing for translating, rotating and changing the shape of the image being acquired with respect to a previous image acquisition.